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ABSTRACT

An action research project explored whether teacher access to information about high school students at the beginning of the semester would result in changes in instruction and interactions with students. Nine pilot project teachers received instruction in how to access the school district's student database, along with information about access to information and confidentiality and training in data analysis. Grade point average, cumulative student attendance, student mobility, health problems, and student special education background were among the pieces of information available to teachers. Some teachers chose to avoid noting names of individual students, and only chose to examine class patterns, identifying groups or skewed distributions, while others reviewed data on individual students. Teachers began using the data to make instructional decisions in the classroom in 1996. The process will be refined as teachers gather data about the results of what they are doing. The teachers eventually will report to the whole school staff about their participation in the project. Early results suggest that students are benefiting from their teachers' awareness and use of data. (SLD)

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Quality Instruction Based on Data to Better Meet Student Needs

by

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The focus on quality improvement in American business during the past few years has raised awareness about the importance of collecting data regarding effectiveness, and modifying processes in the work environment based on a careful analysis of data. Schools, too, have been affected by the Quality movement (Bradley, 1993; Glasser, 1990; Glasser, 1993; McCormick, 1993; Schargel, 1994). Jefferson County School District, the largest school district in Colorado, is one of many school districts around the country interested in improving academic achievement and using data to make decisions about instructional programs and services.

In 1993, the District established the Department of Research and Resource Development. According to Board Policy, the Research Department is responsible for 1) reviewing requests from outside researchers and approving or disapproving the request, 2) cataloguing existing District data and identifying additional data to be collected to assist staff and citizens in making data-based decisions regarding instruction, 3) sponsoring action research in the schools, 4) publicizing research findings and recognizing researchers for their contributions, 5) disseminating research findings to policy makers at the local, state, and national levels, and 6) responding to the Board of Education and other policy-making groups by commissioning studies in areas identified as a priority for investigation. These research activities are carried out through a Board-appointed Research Council including citizens, staff,

and university researchers. In addition, a Data Analyst assists the Executive Director of Research and Resource Development in carrying out the policy.

In 1994, the District's Research Council, a group of 50 individuals representing citizens, teachers, administrators, central office staff, and university professors launched the Baseline Data Project. Initially, the project involved collecting data on test scores, attendance, suspensions, expulsions, and other important areas from each school and cataloguing the data in two ways: 1) preparing a Baseline Data Notebook listing the sources and locations of all of the data about each of the District's 130 schools, and 2) establishing a file for each school, located in the Student Data Department, including data from sources inside and outside of the school district. Schools were encouraged to use the data book and files as they prepared grant requests and planned for new programs.

The Baseline Data Project expanded in 1995 to include a "masterplanning" effort involving all of the agencies serving children and families within Jefferson County. This effort included the law enforcement agencies within the county, the departments of health, social services, and mental health, a number of nonprofit agencies, and the school district. Staff from the various agencies were involved in a pilot effort to interface data across agencies using a risk and resiliency factor framework. The purpose of the effort was to assist agencies in providing cost-effective, coordinated services to children and families. In addition to the countywide and schoolwide data components, the Baseline Data Project initiated an exciting effort in 1996 involving teachers at an individual school.

The District Research Council approached Wheat Ridge Senior High because teachers were already experimenting with two student data systems, and they were looking for ways to

extend and refine their use of data. Teachers decided to make a commitment to adjust their instruction to better meet the needs of the students they were serving based on student data.

The Jefferson County Schools Research Council Director met with the Assistant Principal to discuss the Council's interest in working with a secondary school and its teachers to examine whether instructional improvement would result from teachers having access to all data about their students. Prior to the project, teachers did not have access to the student data files maintained on the District's mainframe computer. In addition, school-based data was difficult to maintain because it was located in files in counselors' offices and the school's administrative areas. The Research Council was interested in providing teachers with easy access to data files and compensation for the additional time necessary to collect data from various sources. Further, the project sought to examine whether or not teachers would use data about their students to align instruction more precisely to student needs. Three additional computers were purchased for the school using Research Council resources. The computers were placed in locations providing easy access for teachers involved in the project.

All of the teachers in the school were invited to participate in the project. Participation was voluntary, and every department was represented. The Research Council provided stipends to compensate the teachers involved in the project for the extra hours to gather the data about their students.

The research questions were as follows: If teachers knew information at the beginning of the semester about their students, what changes in instruction would they make? What influence would having that information have on their interactions with students and their planning for their classes?

During the Spring of 1996, the nine pilot project teachers met at the District's main office in the computer lab with the Director of the Research Council and the Coordinator of Student Data Systems. Teachers were provided with passwords to gain access to the District's mainframe student data base. Teachers brought along class lists for the following semester, and they identified the types of data that would be helpful for them to know about their students. They received instruction in how to access the student database, and they pulled data from the mainframe and from the school's Local Area Network (LAN) that they thought might be helpful to them in planning for their fall classes.

In a subsequent training session, an attorney for the school district provided the teachers with information about access to information and confidentiality. What kinds of data could teachers legally access about students? What responsibilities went along with knowledge about a student? For example, are teachers allowed to know if a student is on free or reduced lunch? In particular situations? Some teachers require students to purchase equipment for class. If the teacher is asking students to purchase items for class, it would be important to know that a particular student is on free or reduced lunch in order to make a decision about waiving the requirement. Another legal implication is the question that if this data were on-line, could students access it? Could parents access it?

In addition, a statistics professor met with the teachers. He provided valuable data analysis information about the data items that might be good predictors of success and those items that would be interesting, but not necessary for decisions. Teachers identified a number of types of data that would be helpful to them in planning for their classes. Grade point average, previous grade(s) in the given subject area, cumulative attendance, number of schools

a student had attended, handicapping conditions and primary provider of services, serious health problems, and scores on the Iowa Test of Educational Development (ITED) were selected by the teachers. School data such as suspensions and expulsions were also thought to be helpful.

According to the statistics professor, grade point average was the single most viable predictor of future success. In addition, teachers decided that knowing a student's previous grade in that subject might alert them to risk of failure in the new class. If English 11 were a prerequisite for a teacher's course, for example, then it might be important to know how a student did in that course. Individual student standardized test scores also provided valuable data for teachers. Such data assisted teachers in grouping students and providing students with learning experiences at the appropriate level of difficulty.

Cumulative student attendance also provided important information for the teacher. One student had a .67 attendance rate. The teacher decided to approach him differently than a student with a .97 attendance rate. She decided to "hook him" on the first day because "he needs a strong personal relationship with me."

Mobility was also an important piece of data. If a student had changed schools frequently, the teacher could decide to spend even more time getting to know the student and helping him/her bond to the school.

Discovering which students had handicapping conditions, and the name of the primary provider also proved helpful to teachers in planning instruction. Previously, teachers didn't have access to sealed special education files. They had no way of knowing whether or not a student received special education services, even though these special education students were

placed in regular classes as part of the Least Restrictive Environment law. Each of the pilot teachers was provided with information on at least one special education student. Teachers also received copies of the students' Individualized Educational Plans (IEPs).

It was essential for teachers to know which students had serious health problems, such as severe allergies to bee stings prior to students entering their class. Knowledge about which students suffered from epileptic seizures, asthma attacks, and other conditions also helped teachers to be better prepared for emergency situations.

Pilot teachers discussed the pros and cons of reviewing data about students in their classes prior to meeting them. Would such knowledge prejudice their view of the students? During the discussion, teachers noted that they often made decisions based on hearsay, lounge gossip, or conversations with other teachers in the hall. Why not base decisions on data that was accurate and focused rather than hearsay?

In order to avoid pre-judging students, some of the teachers still avoided noting names of individuals, and only chose to examine class patterns, identifying groups or skewed distributions. For example, a biology class of 30 students had 14 students who were reading in the first quartile, and 12 reading in the fourth quartile. Since very few were in the middle, the teacher knew she would have to accommodate for differences. Options included changing student reading assignments and putting students in cooperative groups to do assignments.

Teachers are investigating various research questions based on their review of the data. Did collaborative groups work? Did differentiated assignments work? One teacher began a more lab-based approach as opposed to a text-based workshop because the data indicated that standardized reading scores for the group as a whole ranged from the 25th to the 75th

percentile. One teacher who taught Secondary Integrated Math began a more inductive process in her class to help students discover the rules. She is gathering data to determine if this approach, where students are not given the axiom before the practice, is useful in a class in which students have differentiated abilities.

Pilot teachers began using data to make instructional decisions in the classroom during the fall of 1996. The process will be refined as teachers gather data about the results of what they are doing. The ultimate goal is to have the data accessible on the screen in each department office. The first step is having data in hard copy. The second step is placing data in department offices. In addition, there may be more or fewer categories of data actually used. Instructional decisions may not be dependent on all of the data currently collected.

Forces of change addressed by this project included instructional modifications and site-based decision making. This project provided for student diversity. In addition, teachers gained new skills in using data to make decisions.

Due to the increasing site-based focus, the need exists for evaluation to serve site-level decision-makers. Data stored in a computer at the central office or in a Local Area Network provides a valuable basis for making decisions when it is accessible to teachers in a user-friendly manner. Thus, teachers are able to access and use existing knowledge to better understand and serve their clients. Teachers were in agreement that there is no need to collect a huge body of data in the school district unless teachers can use it.

This project addresses a partnership between the Research Council and a school, and encourages the teachers to be researchers. Stakeholders in this project include students, teachers, parents, and the school administration. All of the teachers involved feel responsible

for the use of data, and report back to the Research Council. The clients are the Research Council, students, teachers, and parents.

The action research model is illustrated by this case description. The teachers are the researchers. They are changing the way they work with students and with content based on data. Eventually they will report back to staff about how they used it, and how their instructional strategies changed as a result of data examination. As they do, other teachers may become excited about data-based decision making. Teachers are more likely to be influenced by colleagues who have positive results to report. If the teacher next door says, "This works with these kids," a teacher is more likely to listen. Articles in journals are less likely to impact teacher behaviors.

Teachers are also keeping journals of how they adjusted their instruction based on the data, and the results in terms of student achievement. The journals will be shared and discussed at the end of the semester, and refinements in the process will be made for the following semester.

This program will be expanded in subsequent years to include other teachers at Wheat Ridge Senior High, as well as other teachers in the school district. Meanwhile, numerous students are benefitting from their teachers' awareness and use of available data. As instructional decisions increasingly become based on data, teachers' awareness of themselves as professionals should grow, and student learning and achievement will undoubtedly increase.

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